

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1-18. (Canceled)
19. (Withdrawn) An actuating system comprising:
 - an actuator device including
 - a housing,
 - a piston coupled to the housing by a flexible membrane, the flexible membrane dividing the housing into a first chamber and a second chamber fluidly separated from the first chamber, the piston being responsive to an accumulation of air pressure within the housing,
 - a rod coupled to the piston for movement with the piston, the rod at least partially extending outside of the housing,
 - an air compressor fluidly connected with the first chamber of the housing, the air compressor being operable to generate the air pressure within the first chamber of the housing, and
 - a valve selectively fluidly connecting the first chamber and a location outside of the housing to vent the air pressure from the first chamber; and
 - an object coupled to a portion of the rod outside of the housing, the object being moved in response to movement of the piston.
20. (Withdrawn) The actuating system of Claim 19, wherein the valve comprises a solenoid valve selectively actuated by an electrical power source.
21. (Withdrawn) The actuating system of Claim 20, further comprising a switch selectively electrically connecting the solenoid valve and the power source.
22. (Withdrawn) The actuating system of Claim 19, further comprising:
 - a main power switch electrically connected with a power source; and
 - a limit switch positioned adjacent the piston such that selective movement of the piston triggers the limit switch, the limit switch selectively electrically connecting the air compressor and the main power switch, wherein the main power switch selectively electrically connects the air compressor and the power source to operate the air compressor.

23. (Withdrawn) The actuating system of Claim 19, wherein the object includes a lever for a clutch/brake assembly, wherein actuation of the lever causes engagement and disengagement of the clutch/brake assembly, and wherein the rod is coupled to the lever to engage and disengage the clutch/brake assembly in response to movement of the rod.
24. (Withdrawn) The actuating system of Claim 23, further comprising a spring coupled between the rod and the lever.
25. (Withdrawn) The actuating system of Claim 19, wherein the object includes an idler pulley of a pulley system, wherein the idler pulley is selectively actuated to engage and disengage a belt in the pulley system.
26. (Withdrawn) The actuating system of Claim 19, wherein the object includes a powered implement carried by a motorized vehicle.
27. (Withdrawn) The actuating system of Claim 26, wherein the implement includes a mower deck carried by a riding lawnmower, and wherein the actuator device is configured to raise and lower the mower deck relative to a mowing surface traveled by the riding lawnmower.

28-44 (Canceled)

45. (Withdrawn) An actuating system comprising:
 - an actuator device including
 - a housing;
 - a piston coupled to the housing by a flexible membrane, the flexible membrane dividing the housing into a first chamber and a second chamber fluidly separated from the first chamber, the piston being responsive to a pressure differential in the housing;
 - a rod coupled to the piston for movement with the piston, the rod at least partially extending outside of the housing;

a pump fluidly connected with the first chamber of the housing and operable to generate the pressure differential in the housing; and

a valve selectively fluidly connecting the first chamber and a location outside of the housing; and

an object coupled to a portion of the rod outside of the housing, the object being moved in response to movement of the piston.

46. (Withdrawn) The actuating system of Claim 45, wherein the pressure differential in the housing includes a higher pressure in the first portion of the housing than in the second portion of the housing.

47. (Withdrawn) The actuating system of Claim 45, wherein the object includes a lever for a clutch/brake assembly, wherein actuation of the lever causes engagement and disengagement of the clutch/brake assembly, and wherein the rod is coupled to the lever to engage and disengage the clutch/brake assembly in response to movement of the rod.

48. (Withdrawn) The actuating system of Claim 47, further comprising a spring coupled between the rod and the lever.

49. (Withdrawn) The actuating system of Claim 45, wherein the object includes an idler pulley of a pulley system, wherein the idler pulley is selectively actuated to engage and disengage a belt in the pulley system.

50. (Withdrawn) The actuating system of Claim 45, wherein the object includes a powered implement carried by a motorized vehicle.

51. (Withdrawn) The actuating system of Claim 50, wherein the implement includes a mower deck carried by a riding lawnmower, and wherein the actuator device is configured to raise and lower the mower deck relative to a mowing surface traveled by the riding lawnmower.

52. (Currently amended) A self-contained actuator device adapted to move an object, the actuator device comprising:

a housing containing a substantially fixed mass of air sufficient to operate the actuator device, the housing substantially sealed such that the substantially fixed mass of air is maintained therein;

a movable piston positioned in the housing and separating the housing into a first chamber and a second chamber, the piston being movable along a longitudinal axis in response to changes in air pressure in the first and second chambers;

a rod coupled to the piston for movement with the piston, the rod extending through the first chamber and at least partially extending outside of the housing to couple to the object; and

an air transfer device positioned in the second chamber of the housing, the air transfer device selectively energized based upon air pressure in the first chamber to transfer air from the second chamber of the housing to the first chamber of the housing, thereby moving the piston and the rod in a retracting direction,

wherein to move the piston and the rod in an extending direction, air is vented from the first chamber to the second chamber.

53. (Previously presented) The actuator device of Claim 52, and further comprising a passageway fluidly connecting the air transfer device and the first chamber, wherein the passageway is located in the housing.

54. (Previously presented) The actuator device of Claim 53 wherein the air transfer device includes an air inlet for receiving air from the second chamber and an air outlet fluidly connected with the passageway.

55. (Previously presented) The actuator device of Claim 52, and further comprising a valve positioned in the housing, the valve selectively fluidly connecting the first chamber of the housing and the second chamber of the housing.

56. (Previously presented) The actuator device of Claim 55 wherein the valve selectively fluidly connects the first chamber and the second chamber to vent air pressure from the first chamber to the second chamber.

57. (Previously presented) The actuator device of Claim 55, and further comprising a passageway fluidly connecting the air transfer device and the first chamber, wherein the valve selectively fluidly connects the first chamber via the passageway to the second chamber, and further wherein the passageway is located in the housing.

58. (Previously presented) The actuator device of Claim 55 wherein the valve comprises a solenoid valve selectively actuated by an electrical power source.

59. (Previously presented) The actuator device of Claim 58, and further comprising a switch selectively electrically connecting the solenoid valve and the power source.

60. (Currently amended) The actuator device of Claim 52, and further comprising:
a normally-open main power switch electrically connected with a power source; and
a normally-closed limit switch positioned within the housing adjacent the piston such that selective movement of the piston triggers the limit switch, the limit switch selectively electrically connecting the air transfer device and the main power switch, wherein the main power switch selectively electrically connects the air transfer device and the power source to ~~operate~~ energize the air transfer device.

61. (Previously presented) The actuator device of Claim 60 wherein when the main power switch is closed, voltage from the power source is applied to the limit switch to energize the air transfer device.

62. (Previously presented) The actuator device of Claim 61 wherein when the piston triggers the limit switch, the limit switch is opened to de-energize the air transfer device, and further wherein the air pressure within the first chamber is maintained substantially constant.

63. (Previously presented) The actuator device of Claim 62 wherein when air leaks from the first chamber, the piston moves away from the limit switch and the limit switch closes to energize the air transfer device, and further wherein the air transfer device transfers air from the second chamber to the first chamber until the piston triggers the limit switch to open and to de-energize the air transfer device.

64. (Previously presented) The actuator device of Claim 61 wherein when the main power switch is open, the air transfer device is de-energized and air pressure is equalized between the first chamber of the housing and the second chamber of the housing.

65. (Currently amended) The actuator device of Claim 52, and further comprising:
a main power switch electrically connected with a power source; and
a limit switch positioned adjacent the rod such that selective movement of the rod triggers the limit switch, the limit switch selectively electrically connecting the air transfer device and the main power switch, wherein the main power switch selectively electrically connects the air transfer device and the power source to operate energize the air transfer device.

66. (Previously presented) The actuator device of Claim 52 wherein the air transfer device comprises an air compressor.

67. (Previously presented) The actuator device of Claim 52 wherein the air transfer device comprises an air pump.

68. (Currently amended) An actuator system comprising:
a self-contained actuator device including
a housing containing a substantially fixed mass of air sufficient to operate the actuator device, the housing substantially sealed such that the substantially fixed mass of air is maintained therein;
a movable piston positioned in the housing to separate the housing into a first chamber and a second chamber, the piston being movable along a longitudinal axis in response to changes in air pressure in the first and second chambers;

a rod coupled to the piston for movement with the piston, the rod at least partially extending outside of the housing, and

an air transfer device located within the second chamber of the housing, the air transfer device selectively energized based upon air pressure in the first chamber to transfer air from the second chamber of the housing to the first chamber of the housing wherein a pre-determined air pressure is maintained in the first chamber by the air transfer device,

wherein as air pressure increases in the first chamber the rod retracts into the housing, and

further wherein as air pressure is vented from the first chamber to the second chamber, air pressure decreases in the first chamber and the rod extends out of the housing;

an object coupled to a portion of the rod outside the housing, the object being moved in response to movement of the piston; and

a main power switch electrically connected between the air transfer device and a power source.

69. (Previously presented) The actuating system of Claim 68, and further comprising a passageway fluidly connecting the air transfer device and the first chamber, the passageway located in the housing.

70. (Previously presented) The actuating system of Claim 68, and further comprising a valve selectively fluidly connecting the first chamber of the housing to the second chamber of the housing.

71. (Previously presented) The actuating system of Claim 70 wherein the valve vents air pressure from the first chamber to the second chamber.

72. (Previously presented) The actuating system of Claim 70 wherein the valve comprises a solenoid valve selectively actuated by the power source.

73. (Previously presented) The actuating system of Claim 72, and further comprising a switch selectively electrically connecting the valve and the power source.

74. (Previously presented) The actuating system of Claim 68, and further comprising a normally-closed limit switch positioned within the housing adjacent the piston such that selective movement of the piston triggers the limit switch open or closed, the limit switch selectively electrically connecting the air transfer device and the main power switch.

75. (Previously presented) The actuating system of Claim 68, and further comprising a normally-closed limit switch positioned adjacent the rod such that selective movement of the rod triggers the limit switch open or closed, the limit switch selectively electrically connecting the air transfer device and the main power switch.

76. (Previously presented) The actuating system of Claim 68 wherein the object includes a lever for a clutch/brake assembly, wherein actuation of the lever causes engagement and disengagement of the clutch/brake assembly, and wherein the rod is coupled to the lever to engage and disengage the clutch/brake assembly in response to movement of the rod.

77. (Previously presented) The actuating system of Claim 76, and further comprising a spring coupled between the rod and the lever.

78. (Previously presented) The actuating system of Claim 68 wherein the object includes an idler pulley of a pulley system, wherein the idler pulley is selectively actuated to engage and disengage a belt in the pulley system, and wherein the rod is coupled to the idler pulley to engage and disengage the belt in response to movement of the rod.

79. (Previously presented) The actuating system of Claim 68 wherein the object includes a powered implement carried by a motorized vehicle.

80. (Previously presented) The actuating system of Claim 79 wherein the implement includes a mower deck carried by a riding lawnmower, and wherein the actuator device is configured to raise and lower the mower deck relative to a mowing surface traveled by the riding lawnmower.

81. (Previously presented) The actuating system of Claim 68 wherein the air transfer device comprises an air compressor.

82. (Previously presented) The actuating system of Claim 68 wherein the air transfer device comprises an air pump.

83. (Currently amended) A self-contained actuator device adapted to move an object, the actuator device comprising:

a housing containing a substantially fixed mass of air sufficient to operate the actuator device, the housing substantially sealed such that the substantially fixed mass of air is maintained therein;

a piston positioned in the housing and separating the housing into a first chamber and a second chamber, the piston movable along the longitudinal axis in response to a pressure differential in the housing between the first chamber and the second chamber;

a rod coupled to the piston for movement with the piston, the rod extending through the first chamber and at least partially extending outside of the housing to couple to the object; and

an air transfer device located in the second chamber of the housing and selectively operable to generate the pressure differential in the housing and transfer air from the second chamber to the first chamber, thereby moving the piston and the rod in a first direction,

wherein air is vented from the first chamber to the second chamber to move the piston and the rod in a second direction.

84. (Previously presented) The actuator device of Claim 83 wherein the pressure differential in the housing includes air pressure in the first chamber of the housing greater than air pressure in the second chamber of the housing.

85. (Previously presented) The actuator device of Claim 83, and further comprising a passageway fluidly connecting the air transfer device and the first chamber, wherein the passageway is located in the housing.

86. (Previously presented) The actuator device of Claim 85, and further comprising a valve positioned in the housing, the valve selectively fluidly connecting the first chamber via the passageway and the second chamber of the housing.

87. (Previously presented) The actuator device of Claim 86 wherein the valve selectively equalizes air pressure between the first chamber and the second chamber.

88. (Previously presented) The actuator device of Claim 86, and further comprising a switch selectively electrically connecting the valve and a power source.

89. (Previously presented) The actuator device of Claim 83, and further comprising a main power switch electrically connected with a power source and selectively electrically connected with the air transfer device to operate the air transfer device.

90. (Previously presented) The actuator device of Claim 89, and further comprising a normally-closed limit switch positioned within the housing adjacent the piston such that selective movement of the piston triggers the limit switch open or closed, the limit switch selectively electrically connecting the air transfer device and the main power switch.

91. (Previously presented) The actuator device of Claim 89, and further comprising a normally-closed limit switch positioned adjacent the rod such that selective movement of the rod triggers the limit switch open or closed, the limit switch selectively electrically connecting the air transfer device and the main power switch.

92. (Previously presented) The actuator device of Claim 89, and further comprising a pressure switch positioned within the housing, the pressure switch selectively electrically

connecting the air transfer device and the main power switch based upon a pre-determined air pressure in the first chamber of the housing.

93. (Currently amended) An actuator system comprising:

a main power switch electrically connected with a power source;

a self-contained actuator device including

a housing containing a substantially fixed mass of air sufficient to operate the actuator device, the housing substantially sealed such that the substantially fixed mass of air is maintained therein;

a movable piston positioned in the housing to separate the housing into a first chamber and a second chamber, the piston being movable along a longitudinal axis in response to changes in a pressure differential in the housing between the first chamber and the second chamber;

a rod coupled to the piston for movement with the piston, the rod at least partially extending outside of the housing;

an air transfer device located within the housing and operable to generate the pressure differential in the housing and transfer air from the second chamber to the first chamber wherein a pre-determined air pressure is maintained in the first chamber, the air transfer device including an air inlet for receiving air from the second chamber and an air outlet for discharging air from the air transfer device, and

wherein as air pressure accumulates within the first chamber the rod retracts into the housing and as air pressure vents from the first chamber the rod extends out of the housing;

a passageway fluidly connecting the air outlet of the air transfer device and the first chamber wherein the passageway is located in the housing;

a valve positioned in the housing, the valve selectively fluidly connecting the first chamber via the passageway and the second chamber, wherein the valve selectively equalizes air pressure between the first chamber and the second chamber by venting air pressure from the first chamber,

wherein as air pressure vents from the first chamber the rod extends out of the housing;

an intermediate switch positioned within the housing, the intermediate switch selectively electrically connecting the air transfer device and the main power switch; and

an object coupled to a portion of the rod outside the housing, the object being moved in response to movement of the piston, and

wherein the main power switch is selectively electrically connected with the air transfer device to operate the air transfer device and selectively electrically connected with the valve to operate the valve.

94. (Previously presented) The actuating system of Claim 93 wherein the pressure differential in the housing includes an air pressure in the first chamber of the housing greater than air pressure in the second chamber of the housing.

95. (Previously presented) The actuating system of Claim 93 wherein the intermediate switch comprises a normally-closed limit switch positioned within the housing adjacent the piston such that selective movement of the piston triggers the limit switch open or closed.

96. (Previously presented) The actuating system of Claim 93 wherein the intermediate switch comprises a normally-closed limit switch positioned adjacent the rod such that selective movement of the rod triggers the limit switch open or closed.

97. (Currently amended) The actuating system of Claim 93 wherein the intermediate switch comprises a pressure switch positioned within the housing, the pressure switch selectively electrically connecting the air [[pump]] air transfer device and the main power switch based upon the pre-determined air pressure in the first chamber of the housing.

98. (Previously presented) The actuating system of Claim 93 wherein the object includes a lever for a clutch/brake assembly, wherein actuation of the lever causes engagement and disengagement of the clutch/brake assembly, and wherein the rod is coupled to the lever to engage and disengage the clutch/brake assembly in response to movement of the rod.

99. (Previously presented) The actuating system of Claim 98, and further comprising a spring coupled between the rod and the lever.

100. (Previously presented) The actuating system of Claim 93 wherein the object includes an idler pulley of a pulley system, wherein the idler pulley is selectively actuated to engage and disengage a belt in the pulley system, and wherein the rod is coupled to the idler pulley to engage and disengage the belt in response to movement of the rod.

101. (Previously presented) The actuating system of Claim 93 wherein the object includes a powered implement carried by a motorized vehicle.

102. (Previously presented) The actuating system of Claim 101 wherein the implement includes a mower deck carried by a riding lawnmower, and wherein the actuator device is configured to raise and lower the mower deck relative to a mowing surface traveled by the riding lawnmower.